

ASSESSMENT OF THE AVERAGE DAILY DIETS OF PROFESSIONAL ATHLETES ON ACTUAL AND ALTERED DIETARY BACKGROUNDS

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ABSTRACT

It is known that the biological value of diets characterizes the strength of biological effects on a living organism and consists of the sum of the biological value of proteins, lipids, vitamins, biomicroelements and other biologically active substances [1,2,3].

The purpose of the research was to select the best options for the average daily norms of a set of products for professional athletes of Uzbekistan.

RESEARCH METHODS

The actual nutrition of professional athletes was studied by the method of 24-hour observation and a survey on training bases. For statistical analysis, 1260 menu layouts were used. The nutritional value of the rations was calculated on the basis of tables of the chemical composition of food products [4]. The biological value of the diets was estimated for all BAV (biologically active substances), separately for the cold and warm seasons of the year and expressed in the form of % satisfaction Daily Requirements:

$$\text{БЦР} = \text{Вит. С}_n + \text{Вит. А}_n + \text{ЛИЗИН}_n + \text{МЕТИОНИН}_n$$

$$\text{Вит. С}_p + \text{Вит. А}_p + \text{ЛИЗИН}_p + \text{МЕТИОНИН}_p \dots \text{ и т.д.} \times 100$$

Where, BCR is the biological value of the diet; n - the amount of biologically active substances in the studied diet in mg; p - the daily rate of this ingredient in mg.

Research results. A comparative assessment of the structural composition of biologically active substances and the biological value of the average daily diets of professional athletes on the actual and altered backgrounds of nutrition indicates the effectiveness of the corrections made (Table 1). The balance of nutrients on the altered background of nutrition reached an optimal level. So, if against the actual background of nutrition the balance of nutrients was 1: 1.2: 4.9 in the winter-spring season and 1: 1.2: 5.2 in in the summer-autumn season, then against a changed background, this figure was 1:1.1:4.1 in all seasons. Such an optimal ratio of nutrients for athletes in average daily diets against a modified diet was achieved due to an increase in the nutritional norms of animal proteins, vegetable fats and a decrease in carbohydrate sources. Thus, the proportion of proteins of animal origin on the altered background of nutrition on average increased by 25% compared to the actual background of nutrition, vegetable fats by

15%. The decrease in carbohydrates against the background of a modified diet averaged 7-10%. As the analysis of the biological value of diets in track and field athletes showed, there are no statistically significant differences depending on the seasons of the year. This is due to special attention in the norms of nutrition both in the summer-autumn and in the winter-spring seasons to the sources of vitamins and the possibility in modern conditions to ensure year-round availability of fresh vegetables and greens in Uzbekistan. Also, there are no significant differences in the content of vitamins B₁, B₂, PP, amino acids isoleucine and valine in diets on the actual and altered backgrounds of nutrition, due to the high level of consumption of grain sources of this group of biologically active substances against the actual background of nutrition. At the same time, the biological value of average daily diets on an altered dietary background, due to the optimization of the content of most biologically active substances in the Rations, in all athletes increased to 90.21.2%, from 70.81.0% on the actual background of nutrition.±±

Table 1. Comparative assessment of the biological value of the average daily diets of athletes of Uzbekistan for various sports on actual and changed dietary backgrounds, Mm±

No. p\ p	Sports	Total biological value of rations		
		On a modified power background	Against the actual background of nutrition	R
1.	Running s/n, s/n, , marathon, race walking, half marathon 2000 m 3000 m 5000 m 5 km	<u>89.11.0±</u>	<u>74.61.1±</u>	<u><0.01</u>
		88.81.0±	72.91.1±	<0,01
2.	Run 100- , s/b; , s/b; Running, ., heptathlon, decathlon 200 m 110 m 400 m 400 m 800 m 1500 m	<u>88.71.1±</u>	<u>74.11.0±</u>	<u><0.01</u>
		87.81.0±	72.21.1±	<0,01
3.	High jump, long jump, triple jump, rhythmic gymnastics, springboard, acrobatics, tennis, archery and sports weapons, fencing; Disk, hammer, core, spear	<u>89.81.0±</u>	<u>73.61.0±</u>	<u><0.01</u>
		89.11.0±	72.71.1±	<0,01
4.	Weightlifting, kurash wrestling, freestyle wrestling, judo, turon, Roman wrestling, karate, sambo, boxing and other types of martial arts	<u>89.91.1±</u>	<u>72.41.2±</u>	<u><0.01</u>
		89.21.0±	71.81.1±	<0,01
5.	Cycling	<u>89.61.0±</u>	<u>74.61.3±</u>	<u><0.01</u>
		88.91.0±	72.91.1±	<0,01
6.	Football	90.21.2±	75.21.1±	<0,01
7.	Other game types (volleyball, basketball, water field, handball)	<u>89.11.0±</u>	<u>74.61.1±</u>	<u><0.01</u>
		88.81.0±	72.91.1±	<0,01

Note: in the numerator in men; in the denominator for women.

An increase in the total biological value of average daily diets is achieved by the average daily nutrition standards proposed by us, due to an increase in the diets of vitamin A, D, B₆, B₁₂, essential amino acids - leucine, lysine, methionine and heme iron (due to fish, liver, dairy products), Vitamin C, vitamin B₉ (folacin), fiber, pectin and betacarotenoids (due to vegetables, melons, pumpkin, fruits and greens), potassium, calcium, phosphorus and magnesium (due to

legumes, dairy products and dried fruits), sitosterols, choline and phospholipids (due to vegetable oils and legumes).

At the same time, it should be noted that due to natural products, the norms of consumption of vitamin C, selenium and amino acids leucine, threonine necessary for the body of athletes have not been achieved. The comparatively high intake of selenium in female athletes is due to their fascination with the consumption of seaweed, in order to reduce body weight. According to the literature of recent years [5,6], selenium is an important element in the formation of enzyme systems of the redox process and the regulation of metabolism in the body.

Rich sources of selenium are the products of the sea. Apparently, for continental countries that do not have sea coasts and a characteristic diet with low consumption of marine products, the alimentary problem is not only iodine deficiency, but also selenium deficiency. If the problem of iodine deficiency for continental countries is sufficiently studied and it is solvable through the mass consumption of iodized table salt, then the problem of selenium deficiency has not been studied enough and requires its resolution.

Taking into account the identified deficiency of some biologically active substances, on the basis of our hygienic and toxicological assessment [7], the chemical composition and properties of some domestic and foreign dietary supplements, we have chosen Kuvatin and Bioferron dietary supplements as supplements to food for athletes.

Dietary supplement "Kuvatin" produced by LLC "BIO-FARM HAKIM" (Uzbekistan) according to KSt 64-21465967-01: 2007, obtained from the cocoons of silkworm by hydrolysis, designed to strengthen immunity, with intense physical exertion (athletes, people engaged in heavy physical labor). and is recommended as an additional prophylactic to prevent disturbances in activity cardiovascular system (Table 2).

Syrup "Bioferron", produced by PE at JSC "Andijon-Dori-Darmon" (Andijan region) according to TSh 64-446114763-001 [92], (Table 3). Composition: barberry according to GOST 13857-91; raisins according to GOST 6882-88; cumin according to GOST 29056-91; beets according to GOST 26766-85; navat according to TSh 61-25: 2000; drinking water according to O'zDst 950: 2000. Appearance: transparent viscous liquid without sediment.

Table 2. Chemical composition of dietary supplement "Kuvatin", in mg%

No p / p	Name of amino acids	Content in mg%
1.	Glycine	32,3
2.	Alanine	20,5
3.	Serine	18,0
4.	Tyrosine	9,2
5.	Valine	3,5
6.	Aspartic acid	8,2
7.	Glutamic acid	2,1
8.	Threonine	4,,8
9.	Phenylalanine	0,9
10.	Arginine	1,8
11.	Isoleucine	0,8
12.	Leucine	0,9
13.	Proline	0,9
14.	Lysine	0,3
15.	Tryptophan	0,2
16.	Histidine	0,7
17.	Cystine	0,1

Table 3. Nutritional and biological value of the dietary supplement "Bioferron".

№	Name of substances	Content
1.	Protein, in g per product100 r	2,00,2±
2.	Fats, per g per product100 r	2,60,3±
3.	Carbohydrates, per g per product100 r	12,01,2±
4.	Vitamin C, in mg of product100 r	50,02,0±
5.	Vitamin B ₁ , per mg per product100 r	0,020,005±
6.	Vitamin B ₂ , per mg per product100 r	0,020,004±
7.	Vitamin B ₆ , per mg per product100 r	0,040,01±
8.	Vitamin PP, in mg per product100 r	0,40,02±
9.	Folacin, in mg per product100 r	0,10,01±
10.	Iron, in mg per product100 r	4,50,02±
11.	Potassium, in mg per product100 r	488,04,8±
12.	Calcium, in mg per product100 r	137,01,3±
13.	Magnesium, in mg per product100 r	44,00,4±
14.	Phosphorus, in mg of product100 r	42,00,4±

CONCLUSIONS

1. The balance of nutrients on the altered background of nutrition reached an optimal level and amounted to 1: 1.1: 4.1, against 1: 1.2: 4.9 on the actual background of nutrition. 2. The optimality of the ratio of nutrients in the average daily diets of athletes against a modified diet was achieved due to an increase in the nutritional norms of animal proteins, vegetable fats and a decrease in carbohydrate sources. 3. The increase in the proportion of proteins of animal origin on the altered background of nutrition on average increased by 25% compared to the actual background of nutrition, vegetable fats by 15%. The decrease in carbohydrates against the background of a modified diet averaged 7-10%. 4. The total biological value of the average daily diets on the altered background of nutrition in all athletes increased to 90.21.2%, from 70.81.0% on the actual background of nutrition. 5. An increase in the total biological value of average daily diets was achieved due to an increase in the diets of vitamins A, D, B₁₋₆, B₁₂, essential amino acids - leucine, lysine, methionine and heme iron (due to fish, liver, dairy products), Vitamin C, vitamin B₉ (folacin), fiber, pectin and beta-carotenoids (due to vegetables, melons, pumpkin, fruits and greens), potassium, calcium, phosphorus and magnesium (due to legumes, dairy products and dried fruits), sitosterols, choline and phospholipids (due to vegetable oils and legumes). 6. Due to natural products, the norms of consumption of vitamin C, selenium and amino acids leucine, threonine necessary for the body of athletes have not been achieved. 7. Additional use in the nutrition of athletes of dietary supplements to food "Kuvatin" and "Bioferrone" made it possible to compensate for the deficiency in the diets of vitamin C, selenium and amino acids leucine, threonine.

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